



- ☐ Tentative Specification
- ☐ Preliminary Specification
- ☒ Approval Specification

# MODEL NO.: V546H1

## SUFFIX: PS1

Customer:

APPROVED BY

SIGNATURE

Name / Title

Note

Please return 1 copy for your confirmation with your signature and comments.

| Approved By        | Checked By | Prepared By       |
|--------------------|------------|-------------------|
| Chao-Chun<br>Chung | Ken Wu     | YI-CHEN<br>Chiang |

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**REVISION HISTORY**

| Version | Date      | Page<br>(New)             | Section                       | Description                                                                                                                                                           |
|---------|-----------|---------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C1(2.0) | Jan.21,11 | all                       | all                           | Approval Specification Ver 2.0 was first issued.                                                                                                                      |
| C1(2.1) | Feb.14,11 | 7<br>12<br>17<br>22<br>28 | 2.3<br>5<br>5<br>5.4<br>6.2.2 | Remove the section Electrical Absolute Rating<br>Modify pin assignment 2,3,4<br>Add Note(10)<br>Add flicker adjustment pattern and method<br>Modify the define of T10 |

**1. GENERAL DESCRIPTION****1.1 OVERVIEW**

V546H1-PS1 is a 54.6" TFT Liquid Crystal Display product with driver ICs and 4ch-LVDS interface. This product supports 1920 x 1080 HDTV format and can display true 1.073G colors (8-bit + Hi-FRC /color). The backlight unit is not built in.

**1.2 FEATURES**

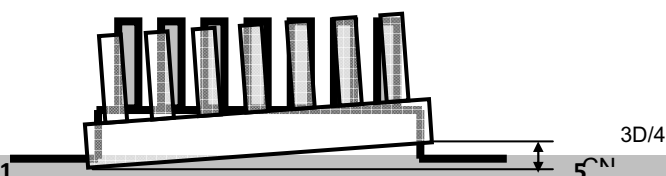
| CHARACTERISTICS ITEMS             | SPECIFICATIONS                                                                                                                 |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Screen Diagonal [in]              | 54.6                                                                                                                           |
| Pixels [lines]                    | 1920 × 1080                                                                                                                    |
| Active Area [mm]                  | 1209.6(H) x 680.4(V) (54.6" diagonal)                                                                                          |
| Sub-Pixel Pitch [mm]              | 0.21(H) x 0.63(V)                                                                                                              |
| Pixel Arrangement                 | RGB vertical stripe                                                                                                            |
| Weight [g]                        | 3450                                                                                                                           |
| Physical Size [mm]                | 1251.4(W) x 737(H) x 1.75(D) Typ                                                                                               |
| Display Mode                      | Transmissive mode / Normally black                                                                                             |
| Contrast Ratio                    | 6000:1 Typ.<br>(Typical value measured at CMI's module)                                                                        |
| Glass thickness (Array / CF) [mm] | 0.7 / 0.7                                                                                                                      |
| Viewing Angle (CR>20)             | +88/-88(H),+88/-88(V) Typ.<br>(Typical value measured at CMI's module)                                                         |
| Color Chromaticity                | R=(0.654, 0.325)<br>G=(0.290, 0.598)<br>B=(0.143, 0.0489)<br>W=(0.308, 0.359)<br>* Please refer to "color chromaticity" on 7.2 |
| Cell Transparency [%]             | 5.3%Typ.<br>(Typical value measured at CMI's module)                                                                           |
| Polarizer Surface Treatment       | Anti-Glare coating (11% Low Haze)<br>Hardness (3H)                                                                             |

**1.3 MECHANICAL SPECIFICATIONS**

| Item                            | Min.                                                                                                           | Typ. | Max. | Unit | Note |
|---------------------------------|----------------------------------------------------------------------------------------------------------------|------|------|------|------|
| Weight                          | -                                                                                                              | 3450 | -    | g    | -    |
| I/F connector mounting position | The mounting inclination of the connector makes the screen center within $\pm 0.5\text{mm}$ as the horizontal. |      |      |      | (2)  |

Note (1) Please refer to the attached drawings for more information of front and back outline dimensions.

Note (2) Connector mounting position



**2. ABSOLUTE MAXIMUM RATINGS****2.1 ABSOLUTE RATINGS OF ENVIRONMENT**

| Item                          | Symbol | Value |      | Unit | Note                           |
|-------------------------------|--------|-------|------|------|--------------------------------|
|                               |        | Min.  | Max. |      |                                |
| Storage Temperature           | TST    | -20   | +60  | °C   | (1)<br>With CMI<br>Module      |
| Operating Ambient Temperature | TOP    | 0     | 50   | °C   | (1), (2)<br>With CMI<br>Module |

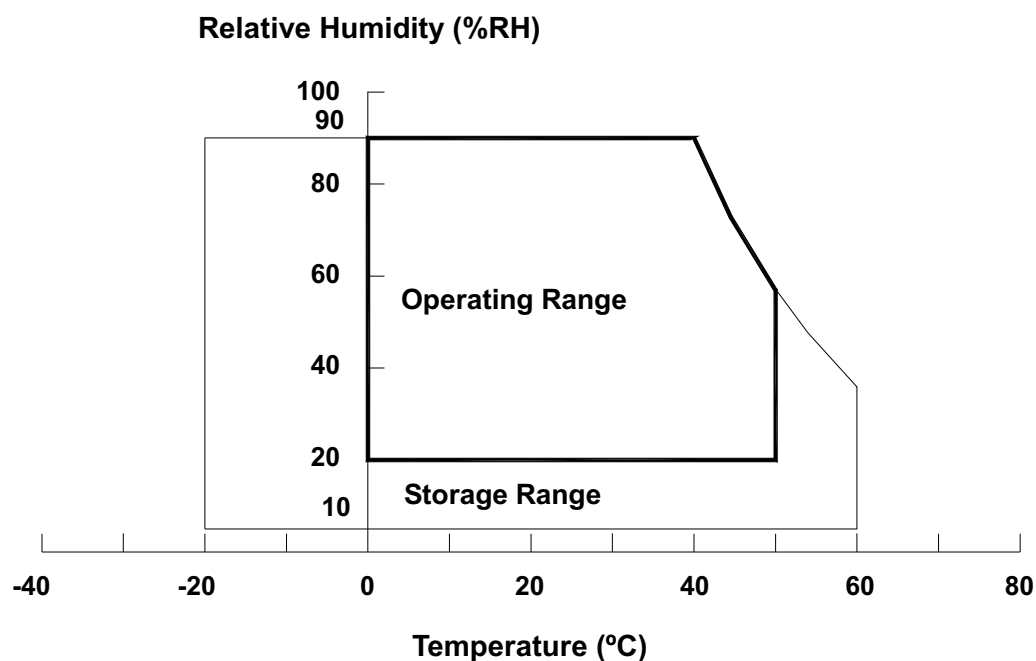
Note (1) Temperature and relative humidity range is shown in the figure below.

(a) 90 %RH Max. ( $T_a \leq 40\text{ }^{\circ}\text{C}$ ).

(b) Wet-bulb temperature should be 39 °C Max. ( $T_a > 40\text{ }^{\circ}\text{C}$ ).

(c) No condensation.

Note (2) The maximum operating temperature is based on the test condition that the surface temperature of display area is less than or equal to 65 °C with LCD module alone in a temperature controlled chamber. Thermal management should be considered in final product design to prevent the surface temperature of display area from being over 65 °C. The range of operating temperature may degrade in case of improper thermal management in final product design.



**2.2 ELECTRICAL ABSOLUTE RATINGS(OPEN CELL)**

Storage Condition: With shipping package.

Storage temperature range: 25±5 °C

Storage humidity range: 50±10%RH

Shelf life: a month

### 3. ELECTRICAL CHARACTERISTICS

#### 3.1 TFT LCD Module

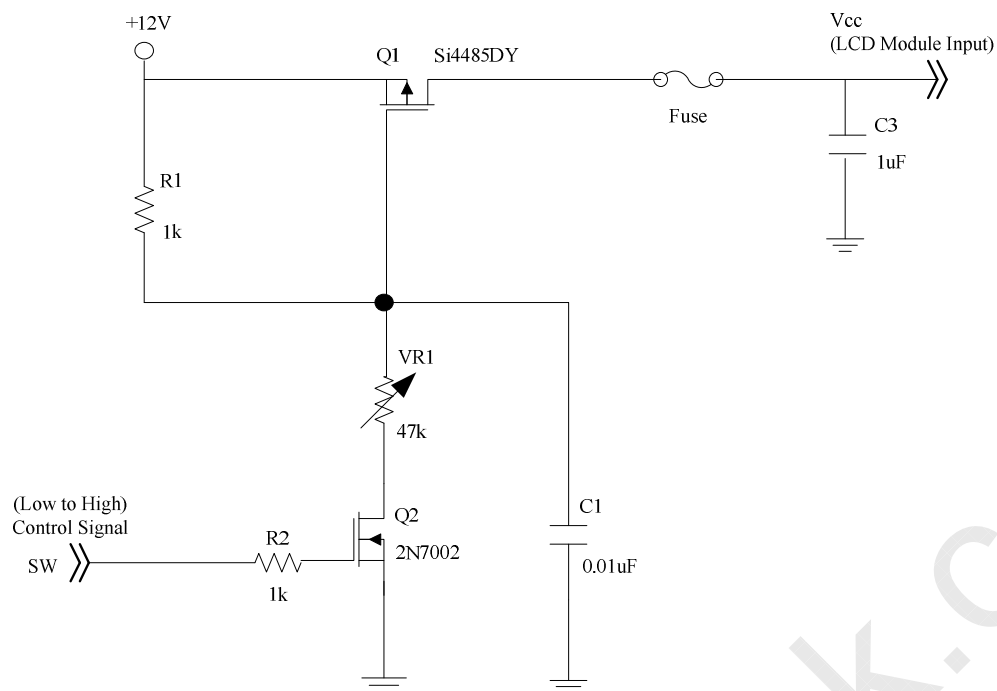
(Ta = 25 ± 2 °C)

| Parameter            |                                           | Symbol            | Value |      |      | Unit | Note |
|----------------------|-------------------------------------------|-------------------|-------|------|------|------|------|
|                      |                                           |                   | Min.  | Typ. | Max. |      |      |
| Power Supply Voltage |                                           | V <sub>CC</sub>   | 10.8  | 12   | 13.2 | V    | (1)  |
| Rush Current         |                                           | I <sub>RUSH</sub> | —     | —    | 4.4  | A    | (2)  |
| Power Consumption    | White Pattern                             | —                 | —     | 7.2  | 8.4  | W    | (3)  |
|                      | Horizontal Stripe                         | —                 | —     | 16.8 | 20.4 | W    |      |
|                      | Black Pattern                             | —                 | —     | 6.96 | 8.16 | W    |      |
| Power Supply Current | White Pattern                             | —                 | —     | 0.6  | 0.7  | A    |      |
|                      | Horizontal Stripe                         | —                 | —     | 1.4  | 1.7  | A    |      |
|                      | Black Pattern                             | —                 | —     | 0.58 | 0.68 | A    |      |
| LVDS interface       | Differential Input High Threshold Voltage | V <sub>LVTH</sub> | +100  | —    | —    | mV   | (4)  |
|                      | Differential Input Low Threshold Voltage  | V <sub>LVTL</sub> | —     | —    | -100 | mV   |      |
|                      | Common Input Voltage                      | V <sub>CM</sub>   | 1.0   | 1.2  | 1.4  | V    |      |
|                      | Differential input voltage (single-end)   | V <sub>ID</sub>   | 200   | —    | 600  | mV   |      |
|                      | Terminating Resistor                      | R <sub>T</sub>    | —     | 100  | —    | ohm  |      |
| CMIS interface       | Input High Threshold Voltage              | V <sub>IH</sub>   | 2.7   | —    | 3.3  | V    |      |
|                      | Input Low Threshold Voltage               | V <sub>IL</sub>   | 0     | —    | 0.7  | V    |      |

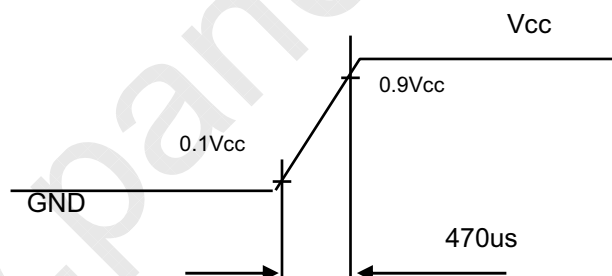
Note (1) The module should be always operated within the above ranges.

Note (2) Measurement condition:





**Vcc rising time is 470us**



Note (3) The specified power consumption and power supply current is under the conditions at  $V_{cc} = 12\text{ V}$ ,  $T_a = 25 \pm 2\text{ }^{\circ}\text{C}$ ,  $f_v = 120\text{ Hz}$ , whereas a power dissipation check pattern below is displayed.

a. White Pattern



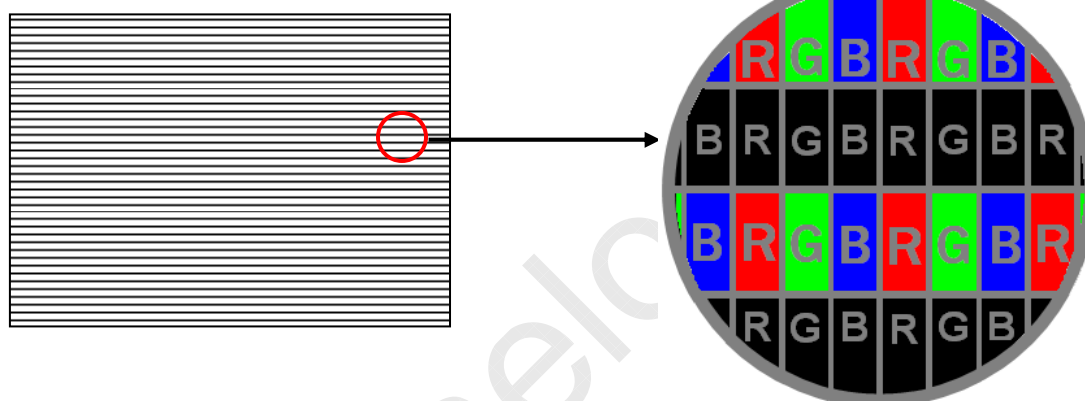
Active Area

b. Black Pattern

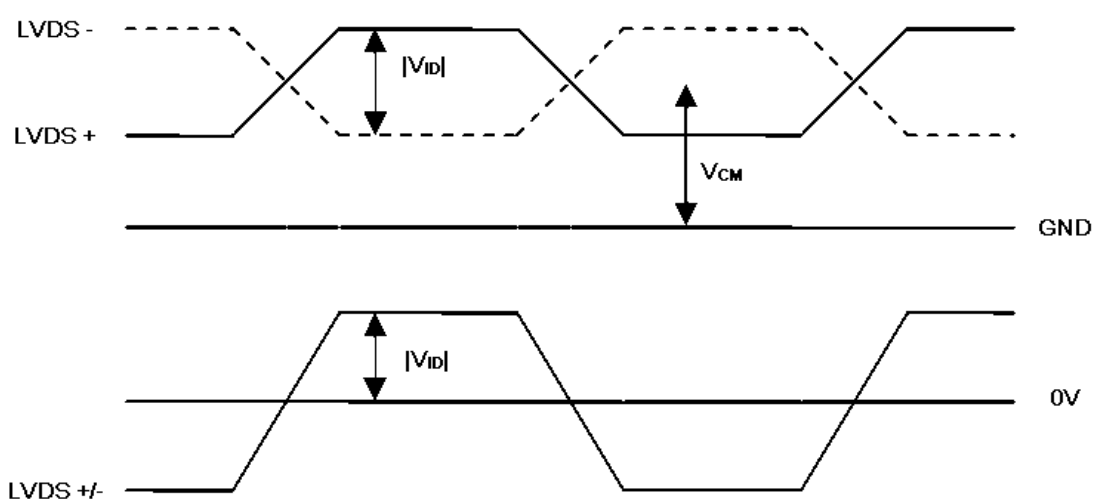


Active Area

c. Horizontal Pattern

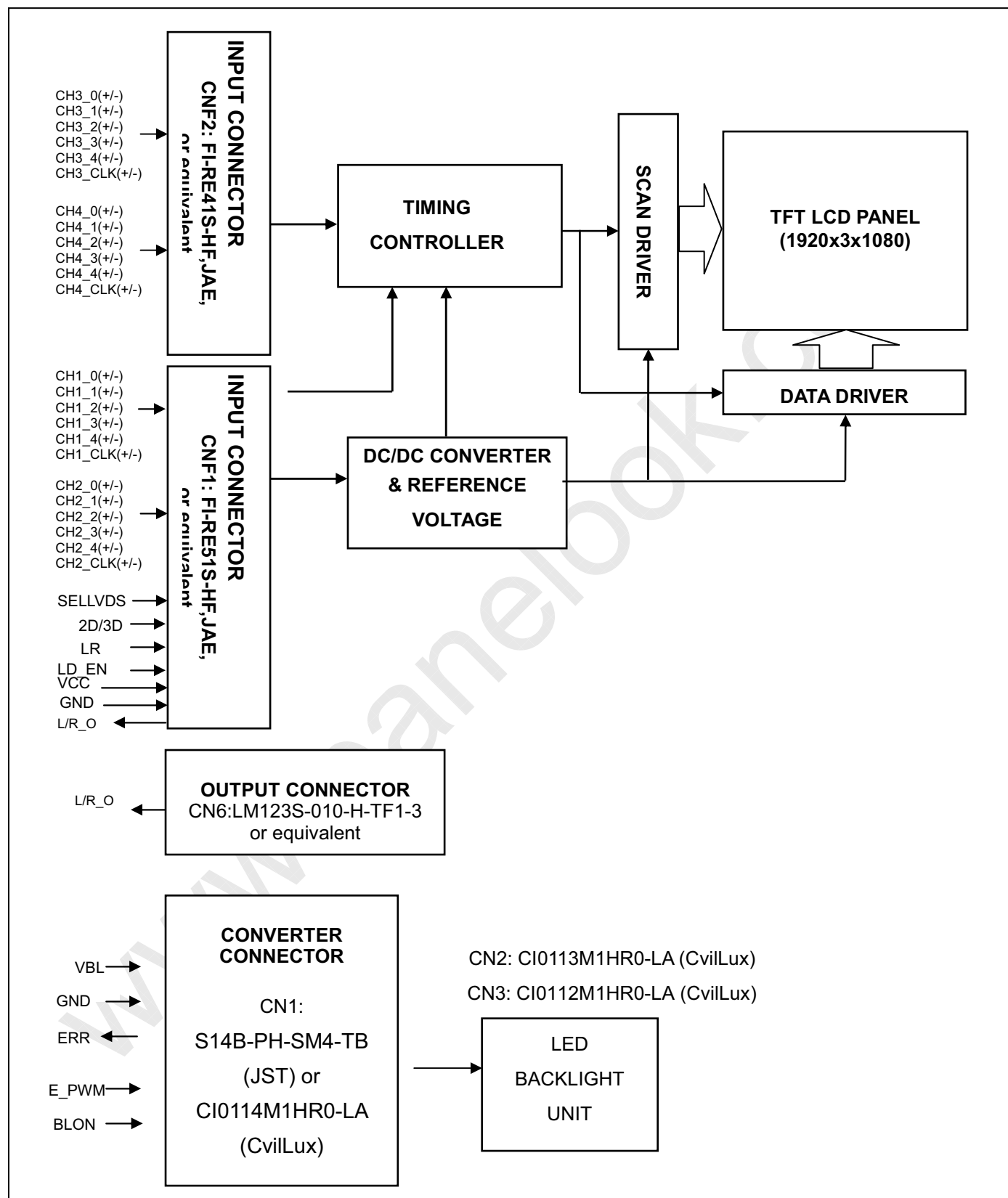


Note (4) The LVDS input characteristics are as follows:



## 4. BLOCK DIAGRAM OF INTERFACE

### 4.1 TFT LCD MODULE



**5 .INPUT TERMINAL PIN ASSIGNMENT****5.1 TFT LCD OPEN CELL**

CNF1 Connector Pin Assignment: (FI-RE51S-HF(JAE) or equivalent)

| Pin | Name    | Description                                                | Note   |
|-----|---------|------------------------------------------------------------|--------|
| 1   | N.C.    | No Connection                                              | (1)    |
| 2   | SCL     | EEPROM Serial Clock (for local dimming demo function)      |        |
| 3   | SDA     | EEPROM Serial Data (for local dimming demo function)       |        |
| 4   | TST_AGE | Aging Mode                                                 | (10)   |
| 5   | L/R_O   | Output signal for Left Right Glasses control               | (9)    |
| 6   | N.C.    | No Connection                                              | (1)    |
| 7   | SELLVDS | LVDS Data Format Selection                                 | (2)(6) |
| 8   | N.C.    | No Connection                                              | (1)    |
| 9   | N.C.    | No Connection                                              |        |
| 10  | N.C.    | No Connection                                              |        |
| 11  | GND     | Ground                                                     |        |
| 12  | CH1[0]- | First pixel Negative LVDS differential data input. Pair 0  | (8)    |
| 13  | CH1[0]+ | First pixel Positive LVDS differential data input. Pair 0  |        |
| 14  | CH1[1]- | First pixel Negative LVDS differential data input. Pair 1  |        |
| 15  | CH1[1]+ | First pixel Positive LVDS differential data input. Pair 1  |        |
| 16  | CH1[2]- | First pixel Negative LVDS differential data input. Pair 2  |        |
| 17  | CH1[2]+ | First pixel Positive LVDS differential data input. Pair 2  |        |
| 18  | GND     | Ground                                                     |        |
| 19  | CH1CLK- | First pixel Negative LVDS differential clock input.        | (8)    |
| 20  | CH1CLK+ | First pixel Positive LVDS differential clock input.        |        |
| 21  | GND     | Ground                                                     |        |
| 22  | CH1[3]- | First pixel Negative LVDS differential data input. Pair 3  | (8)    |
| 23  | CH1[3]+ | First pixel Positive LVDS differential data input. Pair 3  |        |
| 24  | CH1[4]- | First pixel Negative LVDS differential data input. Pair 4  |        |
| 25  | CH1[4]+ | First pixel Positive LVDS differential data input. Pair 4  |        |
| 26  | 2D/3D   | Input signal for 2D/3D Mode Selection                      | (3)(7) |
| 27  | L/R     | Input signal for Left Right eye frame synchronous          | (4)(7) |
| 28  | CH2[0]- | Second pixel Negative LVDS differential data input. Pair 0 | (8)    |



|    |         |                                                            |        |
|----|---------|------------------------------------------------------------|--------|
| 29 | CH2[0]+ | Second pixel Positive LVDS differential data input. Pair 0 | (8)    |
| 30 | CH2[1]- | Second pixel Negative LVDS differential data input. Pair 1 |        |
| 31 | CH2[1]+ | Second pixel Positive LVDS differential data input. Pair 1 |        |
| 32 | CH2[2]- | Second pixel Negative LVDS differential data input. Pair 2 |        |
| 33 | CH2[2]+ | Second pixel Positive LVDS differential data input. Pair 2 |        |
| 34 | GND     | Ground                                                     |        |
| 35 | CH2CLK- | Second pixel Negative LVDS differential clock input.       | (8)    |
| 36 | CH2CLK+ | Second pixel Positive LVDS differential clock input.       |        |
| 37 | GND     | Ground                                                     |        |
| 38 | CH2[3]- | Second pixel Negative LVDS differential data input. Pair 3 | (8)    |
| 39 | CH2[3]+ | Second pixel Positive LVDS differential data input. Pair 3 |        |
| 40 | CH2[4]- | Second pixel Negative LVDS differential data input. Pair 4 |        |
| 41 | CH2[4]+ | Second pixel Positive LVDS differential data input. Pair 4 |        |
| 42 | LD_EN   | Input signal for Local Dimming Enable                      | (5)(7) |
| 43 | N.C.    | No Connection                                              | (1)    |
| 44 | GND     | Ground                                                     |        |
| 45 | GND     | Ground                                                     |        |
| 46 | GND     | Ground                                                     |        |
| 47 | N.C.    | No Connection                                              | (1)    |
| 48 | VCC     | +12V power supply                                          |        |
| 49 | VCC     | +12V power supply                                          |        |
| 50 | VCC     | +12V power supply                                          |        |
| 51 | VCC     | +12V power supply                                          |        |



CNF2 Connector Pin Assignment (FI-RE41S-HF (JAE) or equivalent)

| Pin | Name    | Description                                                | Note |
|-----|---------|------------------------------------------------------------|------|
| 1   | N.C.    | No Connection                                              | (1)  |
| 2   | N.C.    | No Connection                                              |      |
| 3   | N.C.    | No Connection                                              |      |
| 4   | N.C.    | No Connection                                              |      |
| 5   | N.C.    | No Connection                                              |      |
| 6   | N.C.    | No Connection                                              |      |
| 7   | N.C.    | No Connection                                              |      |
| 8   | N.C.    | No Connection                                              |      |
| 9   | GND     | Ground                                                     |      |
| 10  | CH3[0]- | Third pixel Negative LVDS differential data input. Pair 0  | (8)  |
| 11  | CH3[0]+ | Third pixel Positive LVDS differential data input. Pair 0  |      |
| 12  | CH3[1]- | Third pixel Negative LVDS differential data input. Pair 1  |      |
| 13  | CH3[1]+ | Third pixel Positive LVDS differential data input. Pair 1  |      |
| 14  | CH3[2]- | Third pixel Negative LVDS differential data input. Pair 2  |      |
| 15  | CH3[2]+ | Third pixel Positive LVDS differential data input. Pair 2  |      |
| 16  | GND     | Ground                                                     |      |
| 17  | CH3CLK- | Third pixel Negative LVDS differential clock input.        | (8)  |
| 18  | CH3CLK+ | Third pixel Positive LVDS differential clock input.        |      |
| 19  | GND     | Ground                                                     |      |
| 20  | CH3[3]- | Third pixel Negative LVDS differential data input. Pair 3  | (8)  |
| 21  | CH3[3]+ | Third pixel Positive LVDS differential data input. Pair 3  |      |
| 22  | CH3[4]- | Third pixel Negative LVDS differential data input. Pair 4  |      |
| 23  | CH3[4]+ | Third pixel Positive LVDS differential data input. Pair 4  |      |
| 24  | GND     | Ground                                                     |      |
| 25  | GND     | Ground                                                     |      |
| 26  | CH4[0]- | Fourth pixel Negative LVDS differential data input. Pair 0 | (8)  |
| 27  | CH4[0]+ | Fourth pixel Positive LVDS differential data input. Pair 0 |      |
| 28  | CH4[1]- | Fourth pixel Negative LVDS differential data input. Pair 1 |      |
| 29  | CH4[1]+ | Fourth pixel Positive LVDS differential data input. Pair 1 |      |
| 30  | CH4[2]- | Fourth pixel Negative LVDS differential data input. Pair 2 |      |

|    |         |                                                            |     |
|----|---------|------------------------------------------------------------|-----|
| 31 | CH4[2]+ | Fourth pixel Positive LVDS differential data input. Pair 2 | (8) |
| 32 | GND     | Ground                                                     |     |
| 33 | CH4CLK- | Fourth pixel Negative LVDS differential clock input.       | (8) |
| 34 | CH4CLK+ | Fourth pixel Positive LVDS differential clock input.       |     |
| 35 | GND     | Ground                                                     |     |
| 36 | CH4[3]- | Fourth pixel Negative LVDS differential data input. Pair 3 | (8) |
| 37 | CH4[3]+ | Fourth pixel Positive LVDS differential data input. Pair 3 |     |
| 38 | CH4[4]- | Fourth pixel Negative LVDS differential data input. Pair 4 |     |
| 39 | CH4[4]+ | Fourth pixel Positive LVDS differential data input. Pair 4 |     |
| 40 | GND     | Ground                                                     |     |
| 41 | GND     | Ground                                                     |     |

CN6 Connector Pin Assignment (LM123S-010-H-TF1-3 (UNE) or equivalent)

|    |       |                                              |     |
|----|-------|----------------------------------------------|-----|
| 1  | N.C.  | No Connection                                | (1) |
| 2  | N.C.  | No Connection                                |     |
| 3  | N.C.  | No Connection                                |     |
| 4  | GND   | Ground                                       |     |
| 5  | N.C.  | No Connection                                | (1) |
| 6  | L/R_O | Output signal for Left Right Glasses control | (9) |
| 7  | N.C.  | No Connection                                | (1) |
| 8  | N.C.  | No Connection                                |     |
| 9  | N.C.  | No Connection                                |     |
| 10 | N.C.  | No Connection                                |     |

Note (1) Reserved for internal use. Please leave it open.

Note (2) LVDS format selection.

L= Connect to GND, H=Connect to +3.3V or open

|           |              |
|-----------|--------------|
| SELLVDS   | Note         |
| L         | JEIDA Format |
| H or Open | VESA Format  |

Note (3) 2D/3D mode selection.

L= Connect to GND or Open, H=Connect to +3.3V

|       |      |
|-------|------|
| 2D/3D | Note |
|-------|------|

|           |         |
|-----------|---------|
| L or Open | 2D Mode |
| H         | 3D Mode |

Note (4) Input signal for Left Right eye frame synchronous

$V_{IL}=0\sim 0.8\text{ V}$ ,  $V_{IH}=2.0\sim 3.3\text{ V}$

|     |                          |
|-----|--------------------------|
| L/R | Note                     |
| L   | Right synchronous signal |
| H   | Left synchronous signal  |

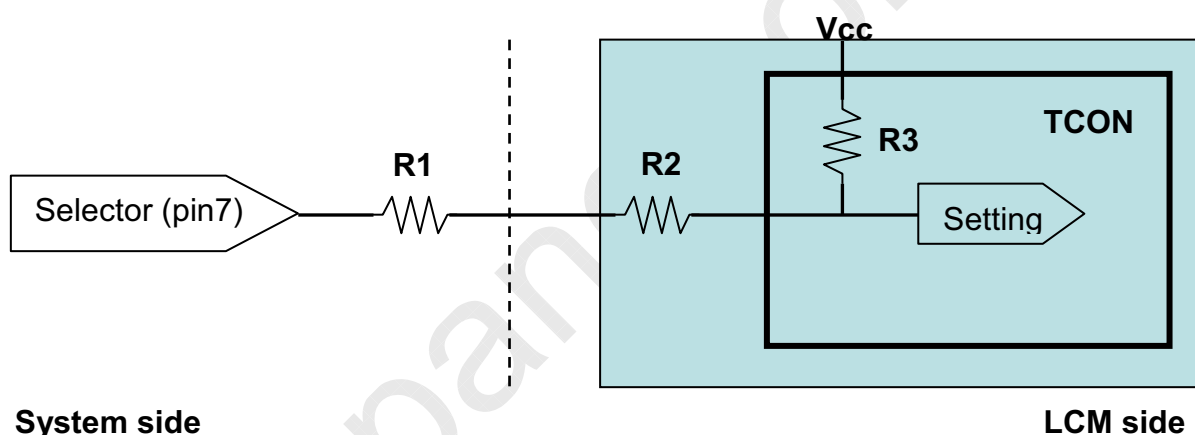
Note (5) Local dimming enable selection.

L= Connect to GND or Open, H=Connect to +3.3V

|           |                       |
|-----------|-----------------------|
| LD_EN     | Note                  |
| L or Open | Local Dimming Disable |
| H         | Local Dimming Enable  |

Note (6) SELLVDS signal pin connected to the LCM side has the following diagram.

R1 in the system side should be less than 1K Ohm. ( $R1 < 1\text{K Ohm}$ )



**System side**

**LCM side**

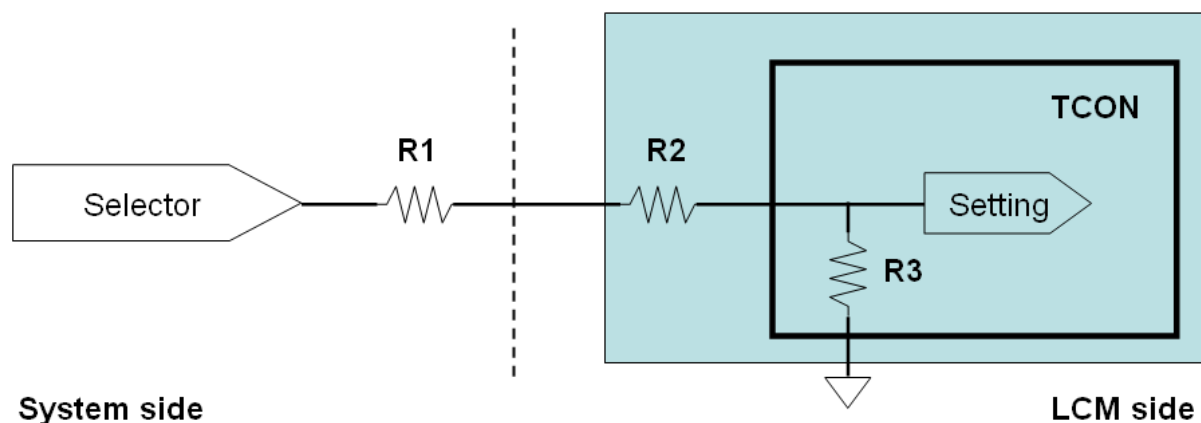
System side

$R1 < 1\text{K}$

Note (7) 2D/3D, L/R and LD\_EN signal pin connected to the LCM side has the following diagram.



R1 in the system side should be less than 1K Ohm. ( $R1 < 1K\ \Omega$ )



System side:  $R1 < 1K$

Note (8) LVDS 4-port Data Mapping

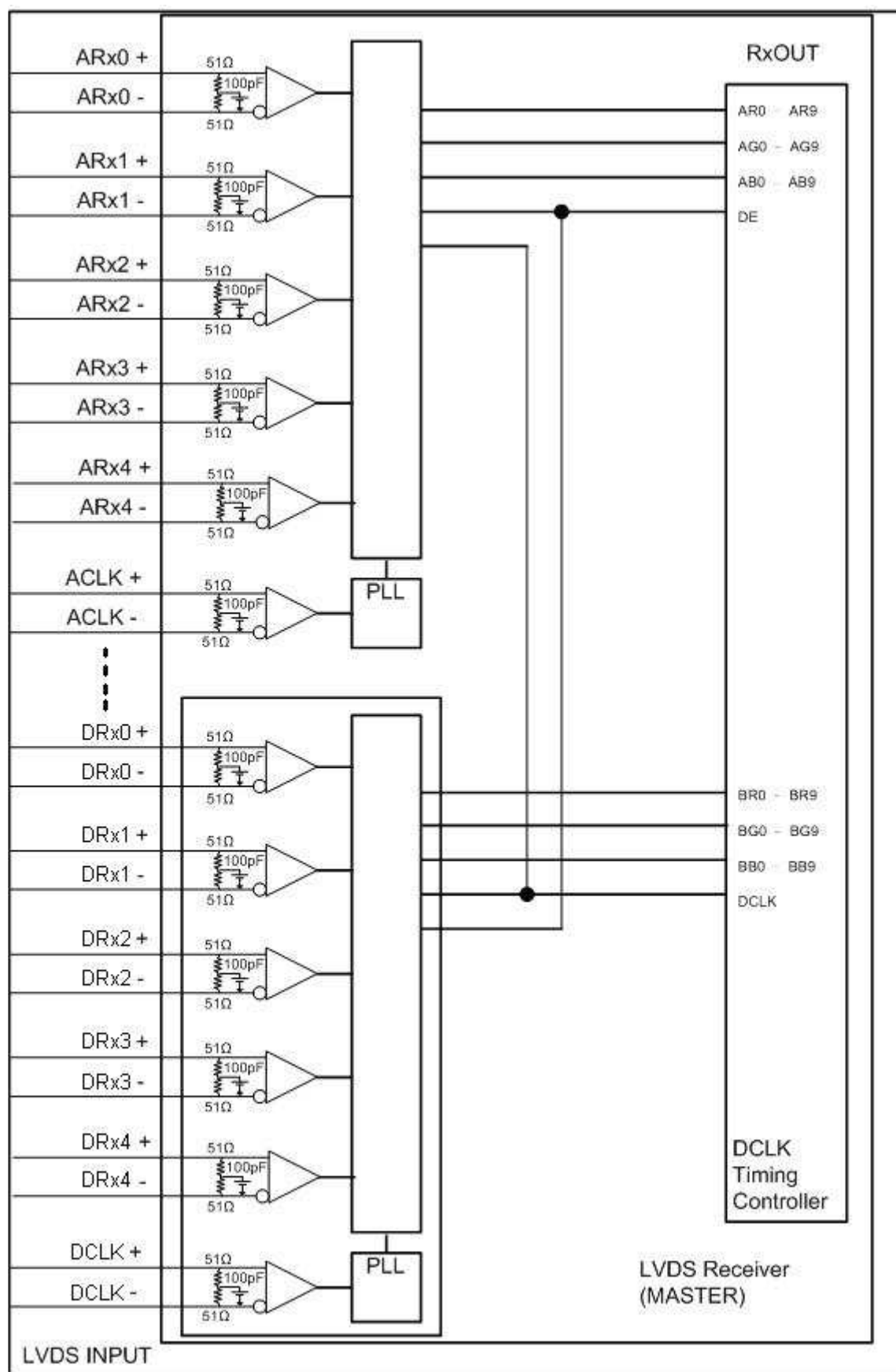
| Port     | Channel of LVDS | Data Stream              |
|----------|-----------------|--------------------------|
| 1st Port | First Pixel     | 1, 5, 9, .....1913, 1917 |
| 2nd Port | Second Pixel    | 2, 6, 10, ....1914, 1918 |
| 3rd Port | Third Pixel     | 3, 7, 11, ....1915, 1919 |
| 4th Port | Fourth Pixel    | 4, 8, 12, ....1916, 1920 |

Note (9) The definition of L/R\_O signal as follows

L= 0V , H= +3.3V

| L/R_O | Note                |
|-------|---------------------|
| L     | Right glass turn on |
| H     | Left glass turn on  |

Note (10) Ground or OPEN: Disable, High: Enable.



AR0~AR9: First pixel R data

AG0~AG9: First pixel G data

AB0~AB9: First pixel B data

BR0~BR9: Second pixel R data

BG0~BG9: Second pixel G data

BB0~BB9: Second pixel B data

DE: Data enable signal

DCLK: Data clock signal

The third and fourth pixel are followed the same rules.

CR0~CR9: Third pixel R data

CG0~CG9: Third pixel G data

CB0~CB9: Third pixel B data

DR0~DR9: Fourth pixel R data

DG0~DG9: Fourth pixel G data

DB0~DB9: Fourth pixel B data

Note (1) A ~ D channel are first, second, third and fourth pixel respectively.

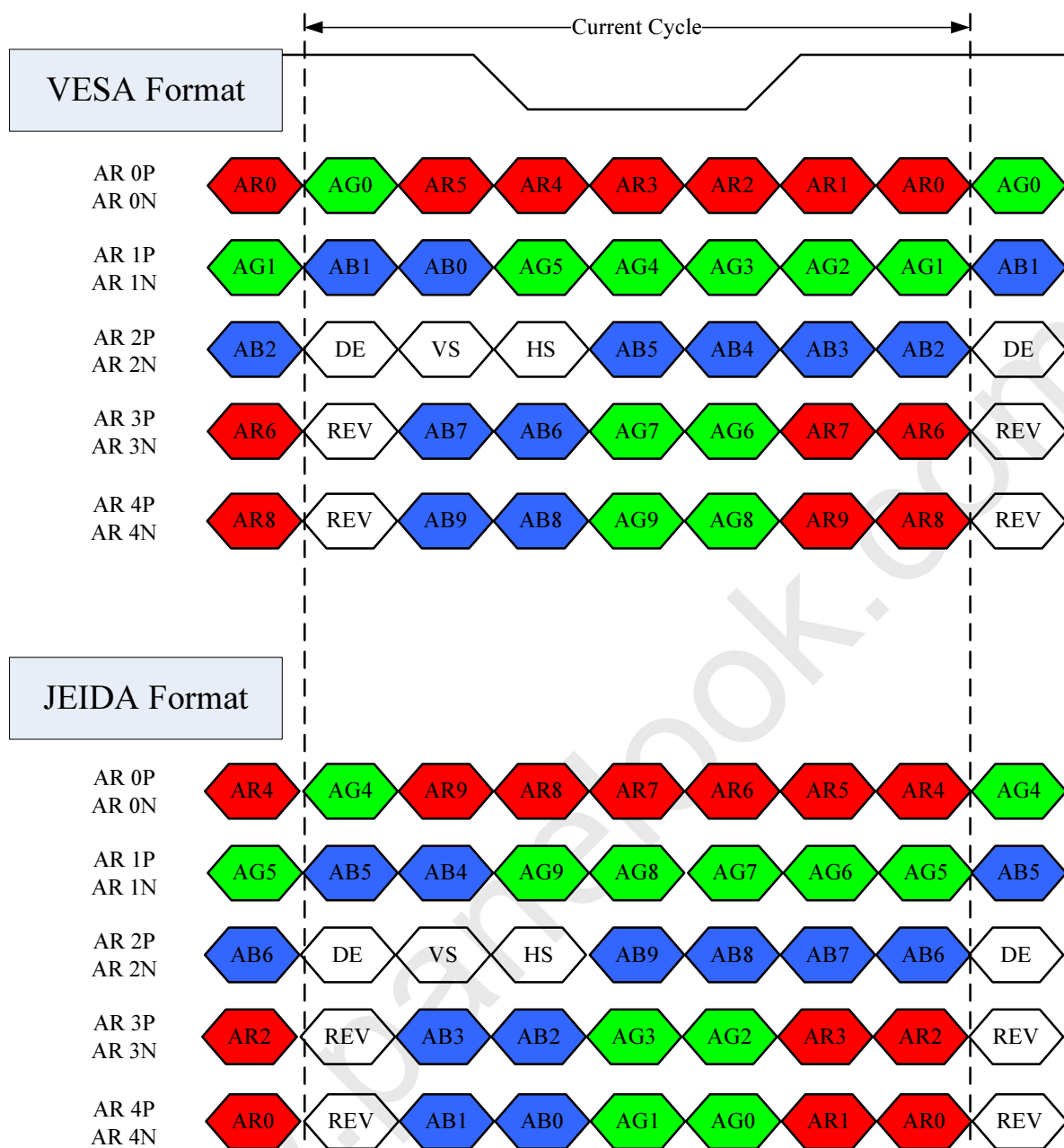
Note (2) The system must have the transmitter to drive the module.

Note (3) LVDS cable impedance shall be 50 ohms per signal line or about 100 ohms per twist-pair line when it is used differentially.

## 5.2 LVDS INTERFACE

JEIDA Format : SELLVDS = L

VESA Format : SELLVDS = H or Open



AR0~AR9: First Pixel R Data (9; MSB, 0; LSB)

AG0~AG9: First Pixel G Data (9; MSB, 0; LSB)

AB0~AB9: First Pixel B Data (9; MSB, 0; LSB)

DE : Data enable signal

DCLK : Data clock signal

RSV: Reserved

### 5.3 COLOR DATA INPUT ASSIGNMENT

The brightness of each primary color (red, green and blue) is based on the 10-bit gray scale data input for the color. The higher the binary input, the brighter the color. The table below provides the assignment of the color versus data input.



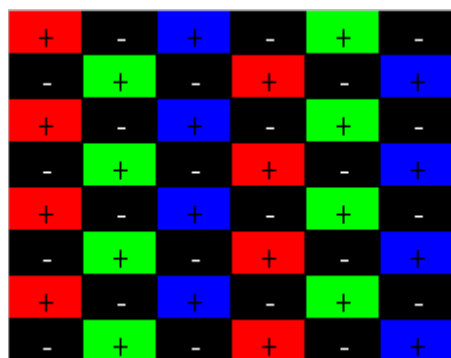
| Color               |                  | Data Signal |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |      |    |    |    |    |    |    |    |   |  |  |  |
|---------------------|------------------|-------------|----|----|----|----|----|----|----|----|----|-------|----|----|----|----|----|----|----|----|----|------|----|----|----|----|----|----|----|---|--|--|--|
|                     |                  | Red         |    |    |    |    |    |    |    |    |    | Green |    |    |    |    |    |    |    |    |    | Blue |    |    |    |    |    |    |    |   |  |  |  |
|                     |                  |             |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |      |    |    |    |    |    |    |    |   |  |  |  |
| R9                  | R8               | R7          | R6 | R5 | R4 | R3 | R2 | R1 | R0 | G9 | G8 | G7    | G6 | G5 | G4 | G3 | G2 | G1 | G0 | B9 | B8 | B7   | B6 | B5 | B4 | B3 | B2 | B1 | B0 |   |  |  |  |
| Basic Colors        | Black            | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 |  |  |  |
|                     | Red              | 1           | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
|                     | Green            | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
|                     | Blue             | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1    | 1  | 1  | 1  | 1  | 1  | 1  | 1  |   |  |  |  |
|                     | Cyan             | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1    | 1  | 1  | 1  | 1  | 1  | 1  | 1  |   |  |  |  |
|                     | Magenta          | 1           | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1    | 1  | 1  | 1  | 1  | 1  | 1  | 1  |   |  |  |  |
|                     | Yellow           | 1           | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
|                     | White            | 1           | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1    | 1  | 1  | 1  | 1  | 1  | 1  | 1  |   |  |  |  |
| Gray Scale Of Red   | Red (0) / Dark   | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
|                     | Red (1)          | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
|                     | Red (2)          | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
|                     | :                |             |    | :  | :  | :  | :  | :  | :  | :  | :  | :     | :  | :  | :  | :  | :  | :  | :  | :  | :  | :    | :  | :  | :  | :  | :  | :  | :  |   |  |  |  |
|                     | :                |             |    | :  | :  | :  | :  | :  | :  | :  | :  | :     | :  | :  | :  | :  | :  | :  | :  | :  | :  | :    | :  | :  | :  | :  | :  | :  | :  |   |  |  |  |
|                     | Red (1021)       | 1           | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
|                     | Red (1022)       | 1           | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
|                     | Red (1023)       | 1           | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
| Gray Scale Of Green | Green (0) / Dark | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
|                     | Green (1)        | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
|                     | Green (2)        | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
|                     | :                | :           | :  | :  | :  | :  | :  | :  | :  | :  | :  | :     | :  | :  | :  | :  | :  | :  | :  | :  | :  | :    | :  | :  | :  | :  | :  | :  | :  |   |  |  |  |
|                     | :                | :           | :  | :  | :  | :  | :  | :  | :  | :  | :  | :     | :  | :  | :  | :  | :  | :  | :  | :  | :  | :    | :  | :  | :  | :  | :  | :  | :  |   |  |  |  |
|                     | Green (1021)     | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
|                     | Green (1022)     | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
|                     | Green (1023)     | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
| Gray Scale Of Blue  | Blue (0) / Dark  | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  |   |  |  |  |
|                     | Blue (1)         | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 1  |   |  |  |  |
|                     | Blue (2)         | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 1  | 0  |   |  |  |  |
|                     | :                | :           | :  | :  | :  | :  | :  | :  | :  | :  | :  | :     | :  | :  | :  | :  | :  | :  | :  | :  | :  | :    | :  | :  | :  | :  | :  | :  | :  |   |  |  |  |
|                     | :                | :           | :  | :  | :  | :  | :  | :  | :  | :  | :  | :     | :  | :  | :  | :  | :  | :  | :  | :  | :  | :    | :  | :  | :  | :  | :  | :  | :  |   |  |  |  |
|                     | Blue (1021)      | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1    | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1 |  |  |  |
|                     | Blue (1022)      | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1    | 1  | 1  | 1  | 1  | 1  | 1  | 0  |   |  |  |  |
|                     | Blue (1023)      | 0           | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1    | 1  | 1  | 1  | 1  | 1  | 1  | 1  |   |  |  |  |

Note (1) 0: Low Level Voltage, 1: High Level Voltage

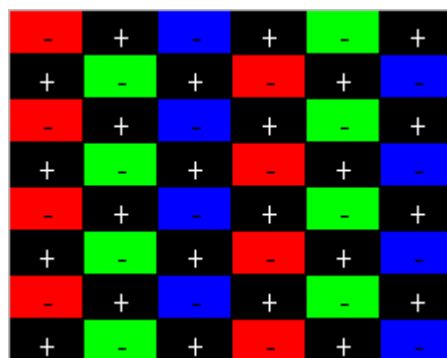
**5.4 FLICKER (Vcom) ADJUSTMENT****(1) Adjustment Pattern:**

2n+1 line-inversion pattern was shown as below. If customer need below pattern, please directly contact with Account FAE.

Frame N



Frame N+1

**(2) Adjustment method: (Digital V-com)**

Programmable memory IC is used for Digital V-com adjustment in this model. CMI provide Auto Vcom tools to adjust Digital V-com. The detail connection and setting instruction, please directly contact with Account FAE or refer CMI Auto V-com adjustment OI. Below items is suggested to be ready before Digital V-com adjustment in customer LCM line.



## 6. INTERFACE TIMING

### 6.1 INPUT SIGNAL TIMING SPECIFICATIONS

(Ta = 25 ± 2 °C)

The input signal timing specifications are shown as the following table and timing diagram.

| Signal              | Item                                 | Symbol                 | Min.            | Typ.  | Max.            | Unit | Note |
|---------------------|--------------------------------------|------------------------|-----------------|-------|-----------------|------|------|
| LVDS Receiver Clock | Frequency                            | $F_{clkin}$<br>(=1/TC) | 60              | 74.25 | 80              | MHz  |      |
|                     | Input cycle to cycle jitter          | $T_{rcj}$              | -               | -     | 200             | ps   | (3)  |
|                     | Spread spectrum modulation range     | $F_{clkin\_mod}$       | $F_{clkin}-2\%$ | -     | $F_{clkin}+2\%$ | MHz  | (4)  |
|                     | Spread spectrum modulation frequency | $F_{SSM}$              | -               | -     | 200             | KHz  |      |
| LVDS Receiver Data  | Setup Time                           | $T_{lvsu}$             | 600             | -     | -               | ps   | (5)  |
|                     | Hold Time                            | $T_{lvhd}$             | 600             | -     | -               | ps   |      |

#### 6.1.1 Timing spec for Frame Rate = 100Hz

| Signal                         | Item    |         | Symbol   | Min. | Typ. | Max. | Unit  | Note                |
|--------------------------------|---------|---------|----------|------|------|------|-------|---------------------|
| Frame rate                     | 2D mode |         | $F_{r5}$ | 94   | 100  | 106  | Hz    |                     |
|                                | 3D mode |         | $F_{r5}$ | 100  | 100  | 100  | Hz    | (7)                 |
| Vertical Active Display Term   | 2D Mode | Total   | $T_v$    | 1090 | 1350 | 1395 | Th    | $T_v=T_{vd}+T_{vb}$ |
|                                |         | Display | $T_{vd}$ | 1080 | 1080 | 1080 | Th    | —                   |
|                                |         | Blank   | $T_{vb}$ | 10   | 270  | 315  | Th    | —                   |
|                                | 3D Mdoe | Total   | $T_v$    | 1350 |      |      | Th    | (6),(8)             |
|                                |         | Display | $T_{vd}$ | 1080 |      |      | Th    |                     |
|                                |         | Blank   | $T_{vb}$ | 270  |      |      | Th    |                     |
| Horizontal Active Display Term | 2D Mode | Total   | $T_h$    | 520  | 550  | 670  | $T_c$ | $T_h=T_{hd}+T_{hb}$ |
|                                |         | Display | $T_{hd}$ | 480  | 480  | 480  | $T_c$ | —                   |
|                                |         | Blank   | $T_{hb}$ | 40   | 70   | 190  | $T_c$ | —                   |
|                                | 3D Mdoe | Total   | $T_h$    | 520  | 550  | 670  | $T_c$ | $T_h=T_{hd}+T_{hb}$ |



|  |  |         |     |     |     |     |    |   |
|--|--|---------|-----|-----|-----|-----|----|---|
|  |  | Display | Thd | 480 | 480 | 480 | Tc | — |
|  |  | Blank   | Thb | 40  | 70  | 190 | Tc | — |

**6.1.2 Timing spec for Frame Rate = 120Hz**

| Signal                         | Item    |         | Symbol          | Min. | Typ. | Max. | Unit | Note       |
|--------------------------------|---------|---------|-----------------|------|------|------|------|------------|
| Frame rate                     | 2D mode |         | F <sub>r6</sub> | 114  | 120  | 126  | Hz   |            |
|                                | 3D mode |         | F <sub>r6</sub> | 120  | 120  | 120  | Hz   | (7)        |
| Vertical Active Display Term   | 2D Mode | Total   | Tv              | 1090 | 1125 | 1395 | Th   | Tv=Tvd+Tvb |
|                                |         | Display | Tvd             | 1080 | 1080 | 1080 | Th   | —          |
|                                |         | Blank   | Tvb             | 10   | 45   | 315  | Th   | —          |
|                                | 3D Mdoe | Total   | Tv              | 1125 |      |      | Th   | (6), (8)   |
|                                |         | Display | Tvd             | 1080 |      |      | Th   |            |
|                                |         | Blank   | Tvb             | 45   |      |      | Th   |            |
| Horizontal Active Display Term | 2D Mode | Total   | Th              | 520  | 550  | 670  | Tc   | Th=Thd+Thb |
|                                |         | Display | Thd             | 480  | 480  | 480  | Tc   | —          |
|                                |         | Blank   | Thb             | 40   | 70   | 190  | Tc   | —          |
|                                | 3D Mdoe | Total   | Th              | 520  | 550  | 670  | Tc   | Th=Thd+Thb |
|                                |         | Display | Thd             | 480  | 480  | 480  | Tc   | —          |
|                                |         | Blank   | Thb             | 40   | 70   | 190  | Tc   | —          |

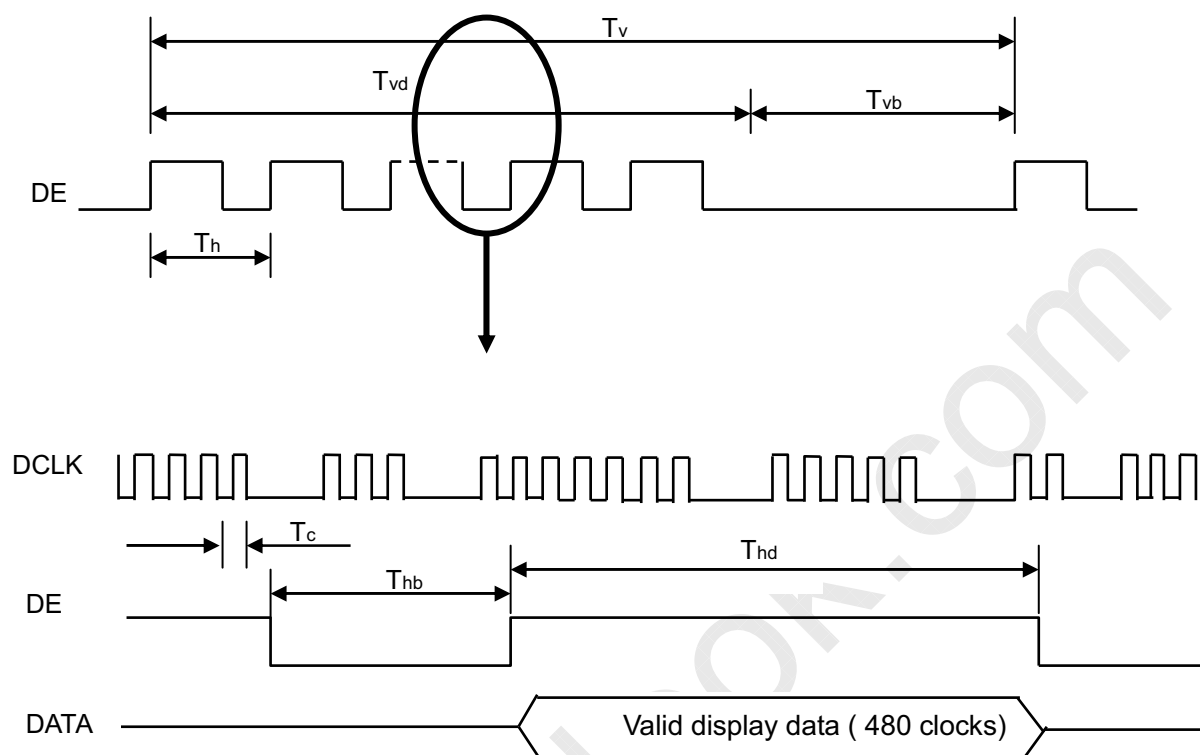
Note (1) Since the module is operated in DE only mode, Hsync and Vsync input signals should be set to low logic level. Otherwise, this module would operate abnormally.

Note (2) Please make sure the range of pixel clock has follow the below equation:

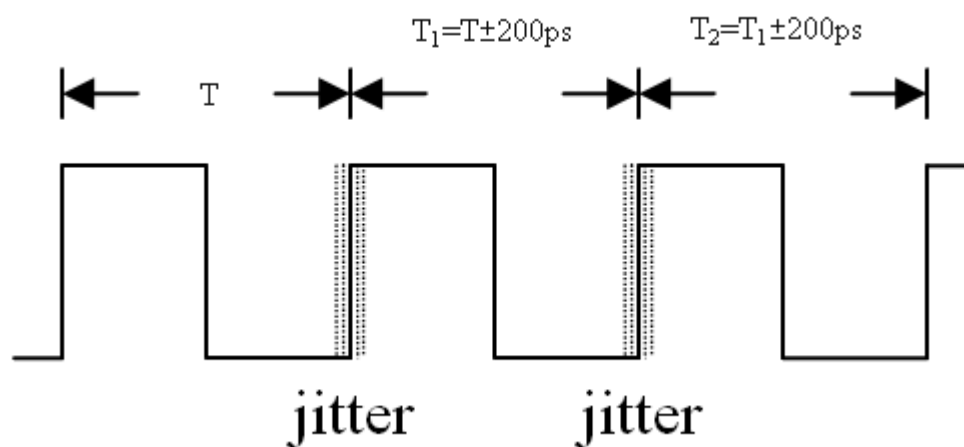
$$F_{clk}(max) \geq F_{r6} \times Tv \times Th$$

$$F_{r5} \times Tv \times Th \geq F_{clk}(min)$$

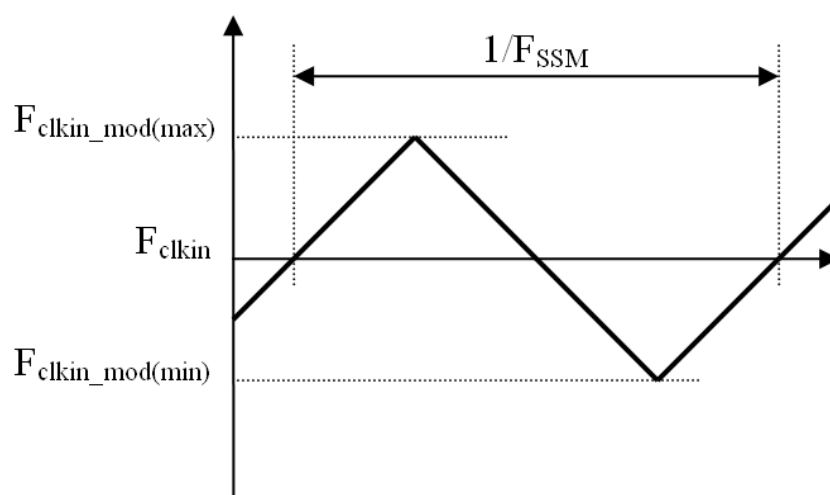


**INPUT SIGNAL TIMING DIAGRAM**

Note (3) The input clock cycle-to-cycle jitter is defined as below figures.  $Trcl = |T_1 - T_2|$

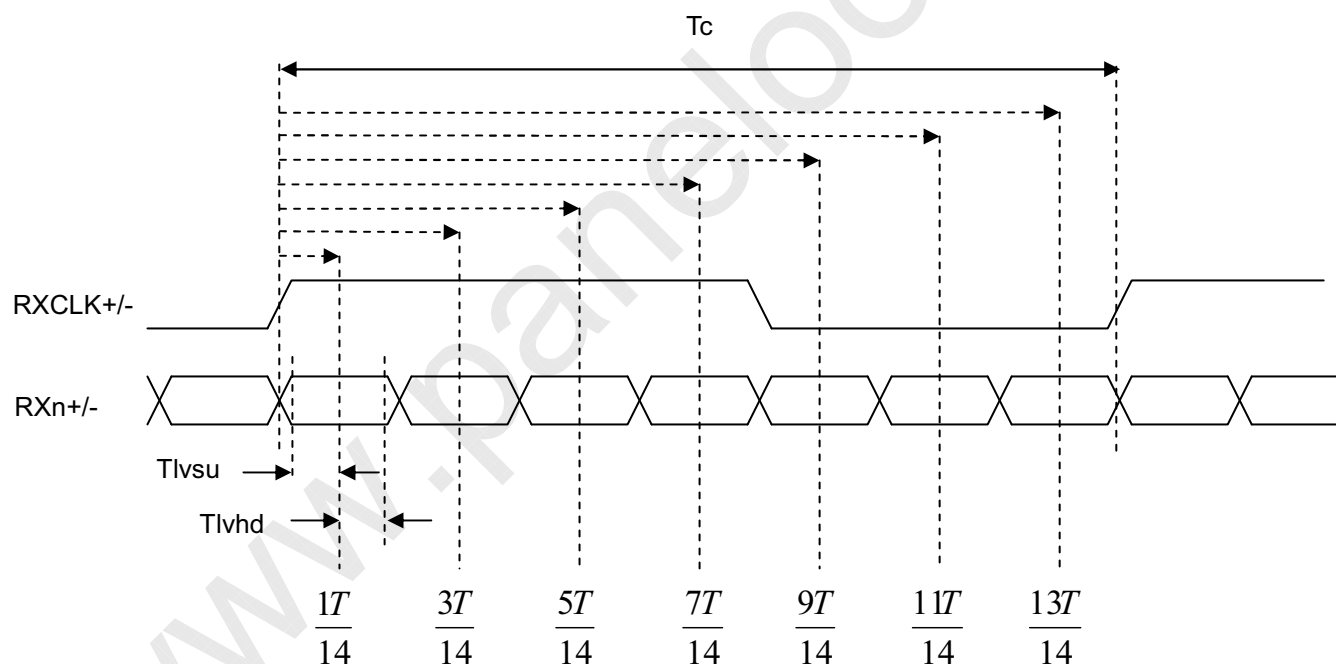


Note (4) The SSCG (Spread spectrum clock generator) is defined as below figures.



Note (5) The LVDS timing diagram and setup/hold time is defined and showing as the following figures.

#### LVDS RECEIVER INTERFACE TIMING DIAGRAM



Note (6) Please fix the Vertical timing (Vertical Total = 1350 / Display = 1080 / Blank = 270) in 100Hz 3D mode  
and Vertical timing (Vertical Total = 1125 / Display = 1080 / Blank = 45) in 120Hz 3D mode

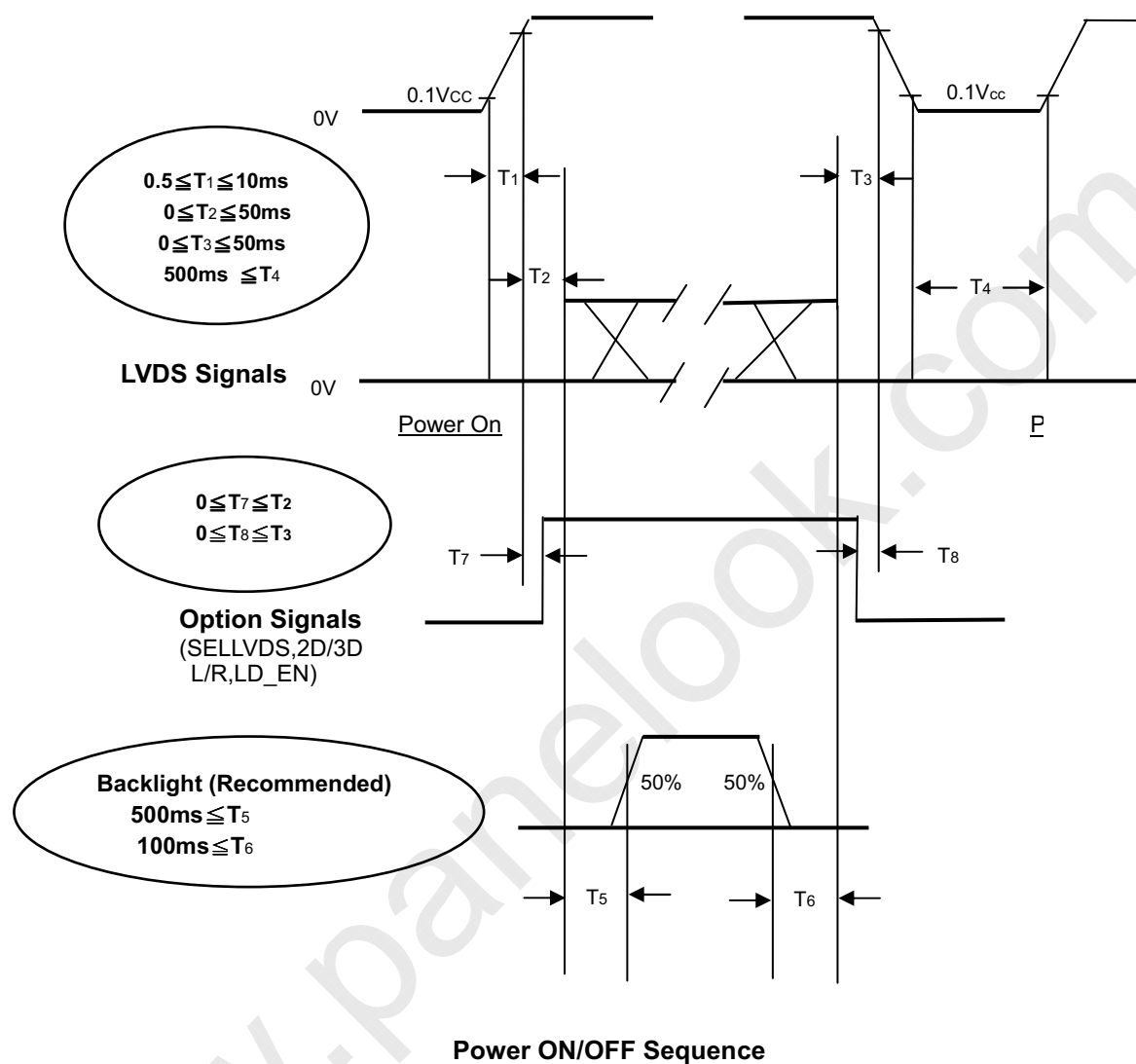
Note (7) In 3D mode, the set up Fr5 and Fr6 in Typ.  $\pm 3$  Hz .In order to ensure that the electric function performance to avoid no display symptom.(Except picture quality symptom.)

Note (8) In 3D mode, the set up Tv and Tvb in Typ.  $\pm 30$ .In order to ensure that the electric function performance to avoid no display symptom.(Except picture quality symptom.)

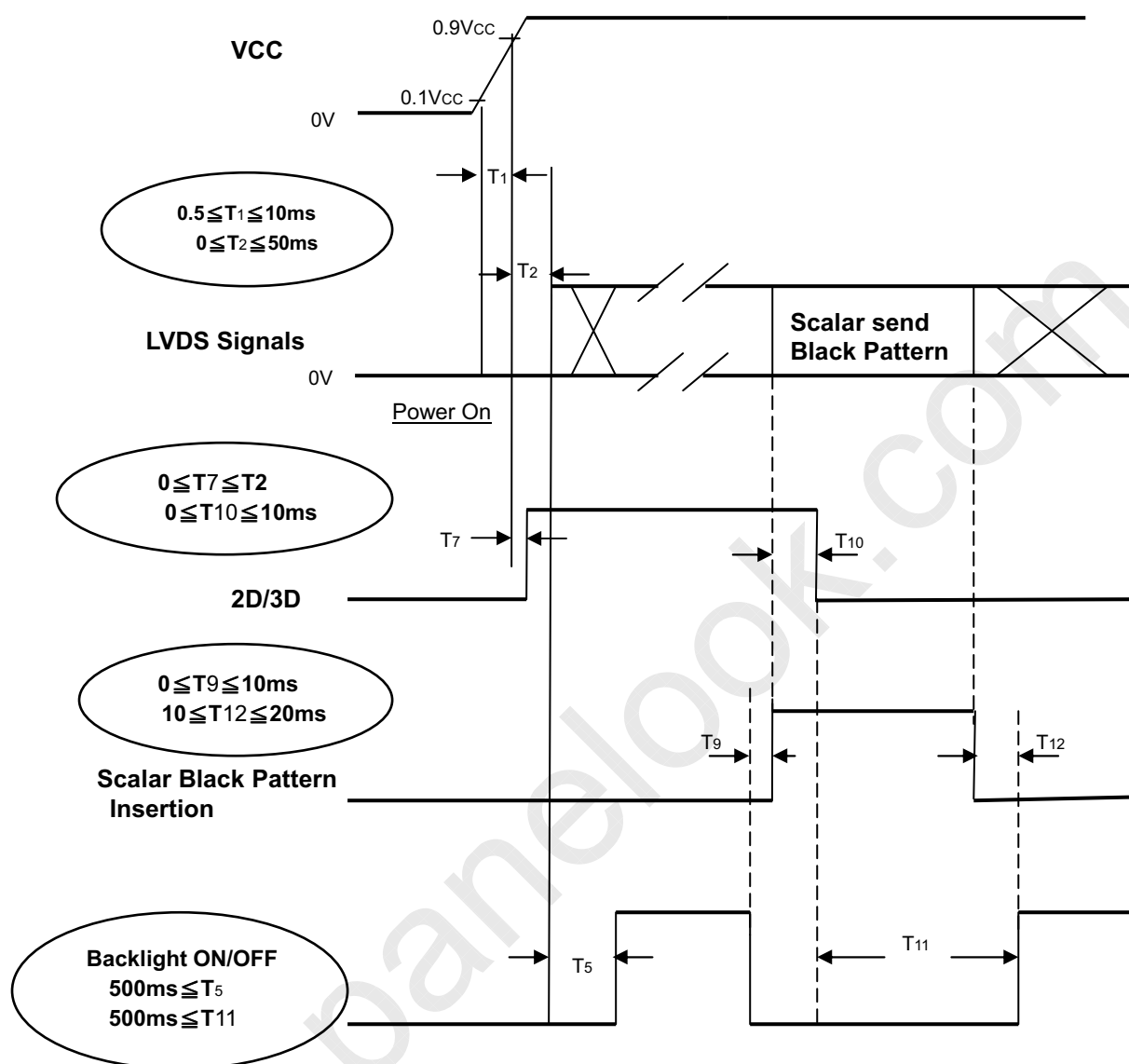
## 6.2 POWER ON/OFF SEQUENCE ( $T_a = 25 \pm 2^\circ\text{C}$ )

### 6.2.1 POWER ON/OFF SEQUENCE

To prevent a latch-up or DC operation of LCD module, the power on/off sequence should be as the diagram below.



## 6.2.2 2D/3D MODE CHANGE 2D to 3D SIGNAL SEQUENCE WITHOUT VCC TURN OFF AND TURN ON



Note (1) The supply voltage of the external system for the module input should follow the definition of Vcc.

Note (2) Apply the LED voltage within the LCD operation range. When the backlight turns on before the LCD operation or the LCD turns off before the backlight turns off, the display may momentarily become abnormal screen.

Note (3) In case of Vcc is in off level, please keep the level of input signals on the low or high impedance. If  $T_2 < 0$ , that maybe cause electrical overstress failure.

Note (4) T4 should be measured after the module has been fully discharged between power off and on period.

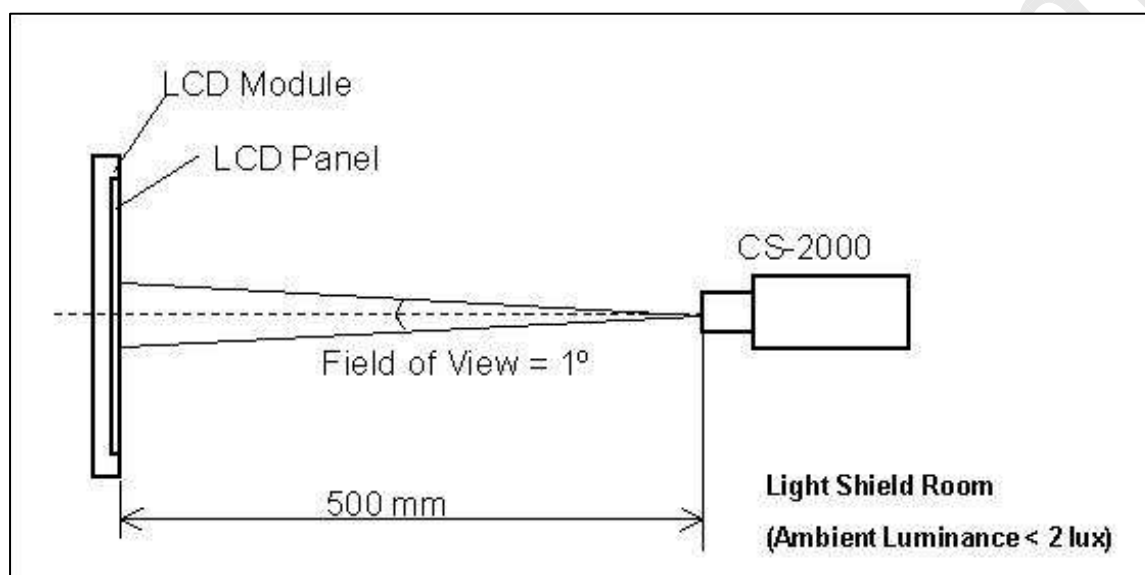
Note (5) Interface signal shall not be kept at high impedance when the power is on.

## 7. OPTICAL CHARACTERISTICS

### 7.1 TEST CONDITIONS

| Item                | Symbol                                                        | Value | Unit |
|---------------------|---------------------------------------------------------------|-------|------|
| Ambient Temperature | Ta                                                            | 25±2  | °C   |
| Ambient Humidity    | Ha                                                            | 50±10 | %RH  |
| Supply Voltage      | V <sub>CC</sub>                                               | 12V   | V    |
| Input Signal        | According to typical value in "3. ELECTRICAL CHARACTERISTICS" |       |      |
| LED Current         | I <sub>L</sub>                                                | 120   | mA   |

The LCD module should be stabilized at given temperature for 1 hour to avoid abrupt temperature change during measuring in a windless room.



### 7.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown as below. The following items should be measured under the test conditions described in 7.1 and stable environment shown in 7.1.

| Item                 |       | Symbol | Condition                                                                                              | Min. | Typ.  | Max. | Unit | Note    |
|----------------------|-------|--------|--------------------------------------------------------------------------------------------------------|------|-------|------|------|---------|
| Color Chromaticity   | Red   | Rcx    | $\theta_x=0^\circ, \theta_Y=0^\circ$<br>Viewing Angle at Normal Direction<br>Standard light source “C” | -    | 0.654 | -    | -    | (0)     |
|                      |       | Rcy    |                                                                                                        |      | 0.325 |      | -    |         |
|                      | Green | Gcx    |                                                                                                        |      | 0.290 |      | -    |         |
|                      |       | Gcy    |                                                                                                        |      | 0.598 |      | -    |         |
|                      | Blue  | Bcx    |                                                                                                        |      | 0.143 |      | -    |         |
|                      |       | Bcy    |                                                                                                        |      | 0.089 |      | -    |         |
|                      | White | Wcx    |                                                                                                        |      | 0.308 |      | -    |         |
|                      |       | Wcy    |                                                                                                        |      | 0.359 |      | -    |         |
| Center Transmittance |       | T%     | $\theta_x=0^\circ, \theta_Y=0^\circ$                                                                   | -    | 5.3   | -    | %    | (1),(6) |



|                 |            |               |                                                         |   |      |     |      |         |
|-----------------|------------|---------------|---------------------------------------------------------|---|------|-----|------|---------|
| Contrast Ratio  |            | CR            | with CMI module                                         |   | 6000 | -   | -    | (1),(3) |
| Response Time   |            | Gray to gray  | $\theta_x=0^\circ, \theta_y=0^\circ$<br>with CMI Module | - | 6    | 12  | ms   | (1),(4) |
| White Variation |            | $\delta W$    | $\theta_x=0^\circ, \theta_y=0^\circ$<br>with CMI module | - | -    | 1.3 | -    | (1),(5) |
| Viewing Angle   | Horizontal | $\theta_{x+}$ | CR $\geq$ 20<br>With CMI module                         | - | 88   | -   | Deg. | (1),(2) |
|                 |            | $\theta_{x-}$ |                                                         | - | 88   | -   |      |         |
|                 | Vertical   | $\theta_{y+}$ |                                                         | - | 88   | -   |      |         |
|                 |            | $\theta_{y-}$ |                                                         | - | 88   | -   |      |         |

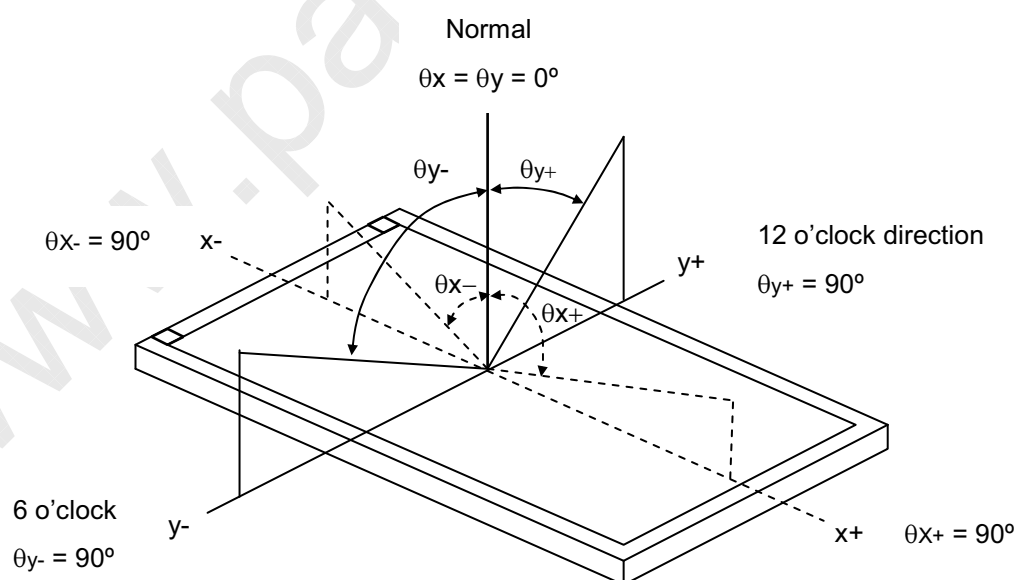
Note (0) Light source is the standard light source "C" which is defined by CIE and driving voltage are based on suitable gamma voltages. The calculating method is as following:

1. Measure Module's and BLU's spectrum at center point. White and R,G,B are with signal input. BLU (for V546H1-LS1) is supplied by CMI.
2. Calculate cell's spectrum.
3. Calculate cell's chromaticity by using the spectrum of standard light source "C".

Note (1) Light source is the BLU which supplied by CMI and driving voltage are based on suitable gamma voltages.

Note (2) Definition of Viewing Angle ( $\theta_x, \theta_y$ ):

Viewing angles are measured by Autronic Conoscope Cono-80



Note (3) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

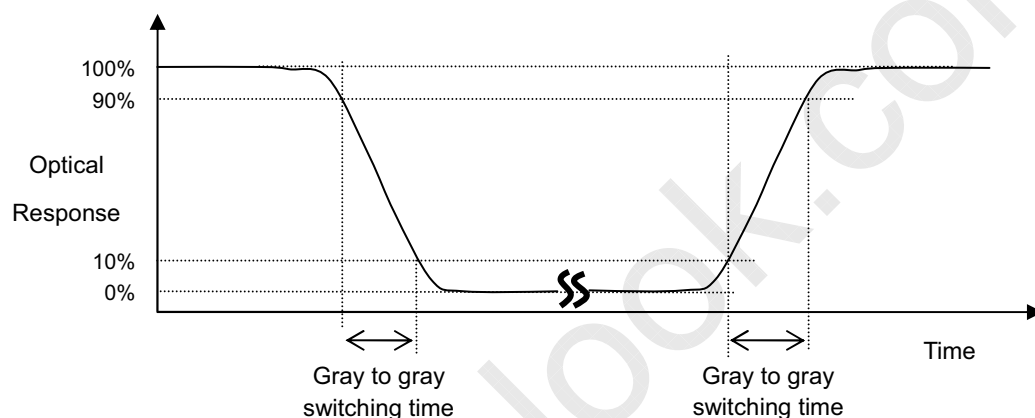
$$\text{Contrast Ratio (CR)} = \frac{\text{Surface Luminance of L255}}{\text{Surface Luminance of L0}}$$

L255: Luminance of gray level 255

L 0: Luminance of gray level 0

CR = CR (5), where CR (X) is corresponding to the Contrast Ratio of the point X at the figure in Note (5).

Note (4) Definition of Gray-to-Gray Switching Time:



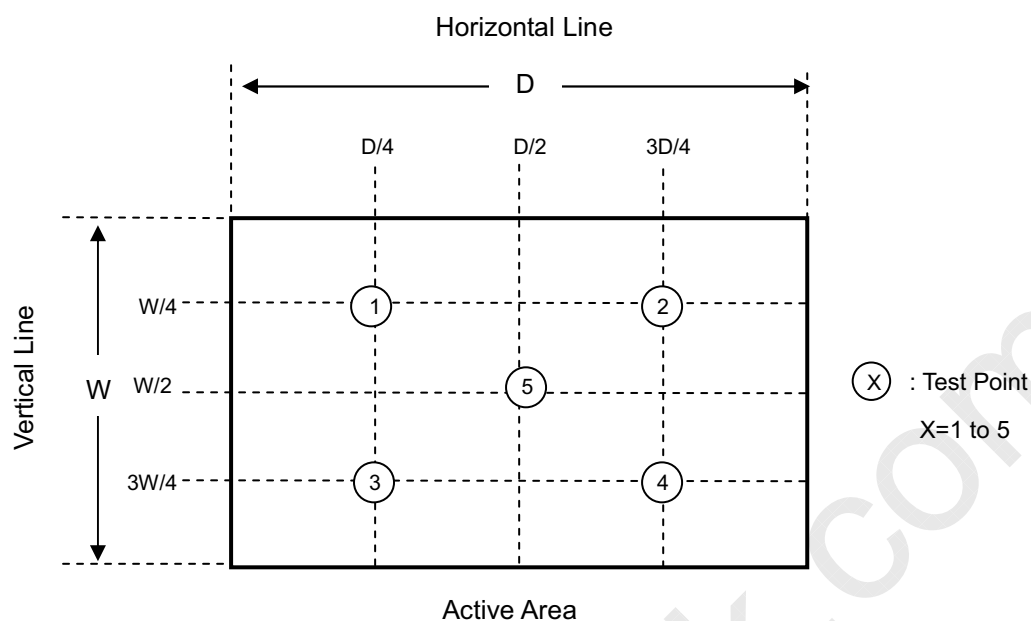
The driving signal means the signal of gray level 0, 124, 252, 380, 508, 636, 764, 892 and 1023.

Gray to gray average time means the average switching time of gray level 0, 124, 252, 380, 508, 636, 764, 892 and 1023 to each other.

Note (5) Definition of White Variation ( $\delta W$ ):

Measure the luminance of gray level 255 at 5 points

$$\delta W = \text{Maximum [L (1), L (2), L (3), L (4), L (5)]} / \text{Minimum [L (1), L (2), L (3), L (4), L (5)]}$$



Note (6) Definition of Transmittance (T%) :

Measure the luminance of gray level 255 at center point of LCD module.

$$\text{Transmittance (T\%)} = \frac{\text{Luminance of LCD module}}{\text{Luminance of backligh unit}} \times 100\%$$



## 8. PRECAUTIONS

### 8.1 ASSEMBLY AND HANDLING PRECAUTIONS

- [ 1 ] Do not apply rough force such as bending or twisting to the module during assembly.
- [ 2 ] It is recommended to assemble or to install a module into the user's system in clean working areas. The dust and oil may cause electrical short or worsen the polarizer.
- [ 3 ] Do not apply pressure or impulse to the module to prevent the damage of LCD panel and Backlight.
- [ 4 ] Always follow the correct power-on sequence when the LCD module is turned on. This can prevent the damage and latch-up of the CMOS LSI chips.
- [ 5 ] Do not plug in or pull out the I/F connector while the module is in operation.
- [ 6 ] Do not disassemble the module.
- [ 7 ] Use a soft dry cloth without chemicals for cleaning, because the surface of polarizer is very soft and easily scratched.
- [ 8 ] Moisture can easily penetrate into LCD module and may cause the damage during operation.
- [ 9 ] When storing modules as spares for a long time, the following precaution is necessary.
  - [ 9.1 ] Do not leave the module in high temperature, and high humidity for a long time. It is highly recommended to store the module with temperature from 0 to 35°C at normal humidity without condensation.
  - [ 9.2 ] The module shall be stored in dark place. Do not store the TFT-LCD module in direct sunlight or fluorescent light.
- [ 10 ] When ambient temperature is lower than 10°C, the display quality might be reduced. For example, the response time will become slow, and the starting voltage of CCFL will be higher than that of room temperature.

### 8.2 SAFETY PRECAUTIONS

- [ 1 ] The startup voltage of a Backlight is approximately 1000 Volts. It may cause an electrical shock while assembling with the inverter. Do not disassemble the module or insert anything into the Backlight unit.
- [ 2 ] If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, skin or clothes, it has to be washed away thoroughly with soap.
- [ 3 ] After the module's end of life, it is not harmful in case of normal operation and storage.

## 9. DEFINITION OF LABELS

### 9.1 OPEN CELL LABEL

The barcode nameplate is pasted on each open cell as illustration for CMI internal contro

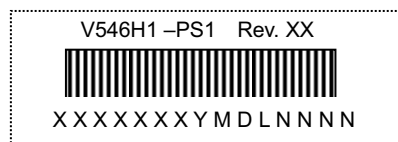
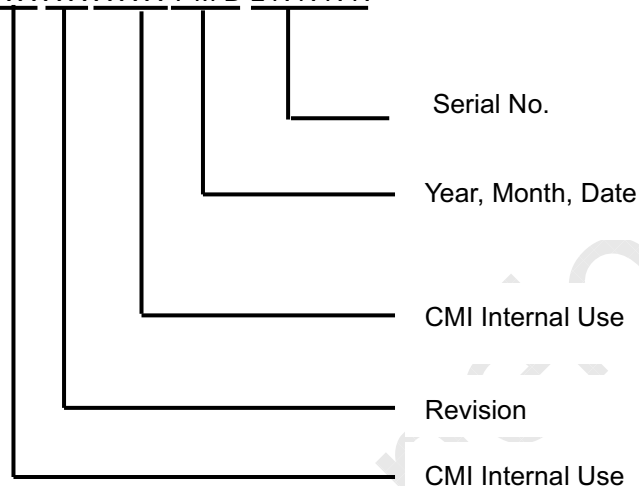


Figure.8-1 Serial No. Label on SPWB

Model Name: V546H1-PS1

Revision: Rev. XX, for example: A0, A1... B1, B2... or C1, C2...etc.

Serial ID: X X X X X X Y M D L N N N N



Serial ID includes the information as below:

Manufactured Date:

Year: 2010=0, 2011=1, 2012=2...etc.

Month: 1~9, A~C, for Jan. ~ Dec.

Day: 1~9, A~Y, for 1st to 31st, exclude I ,O, and U.

Revision Code: Cover all the change

Serial No.: Manufacturing sequence of product

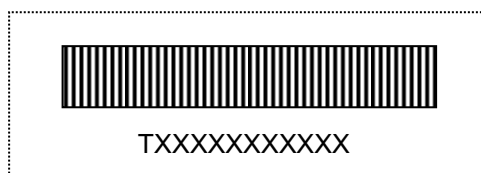
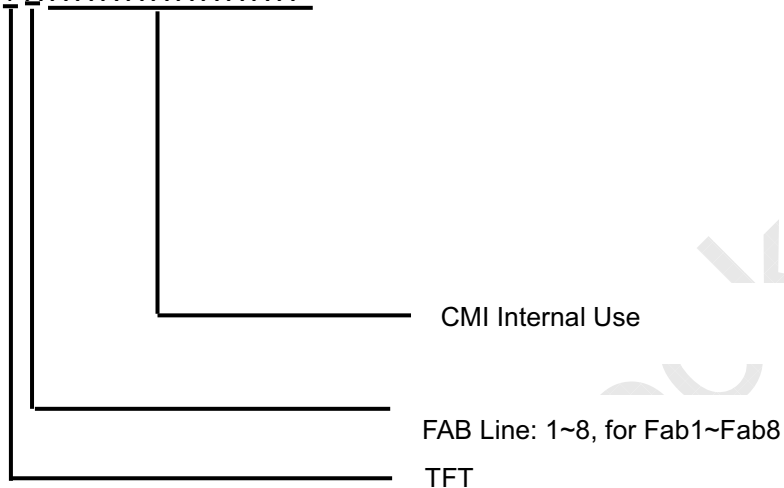


Figure.9-2 Panel ID Label on Cell

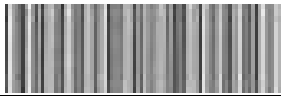
Panel ID Label includes the information as below:

Panel ID: T X X X X X X X X X



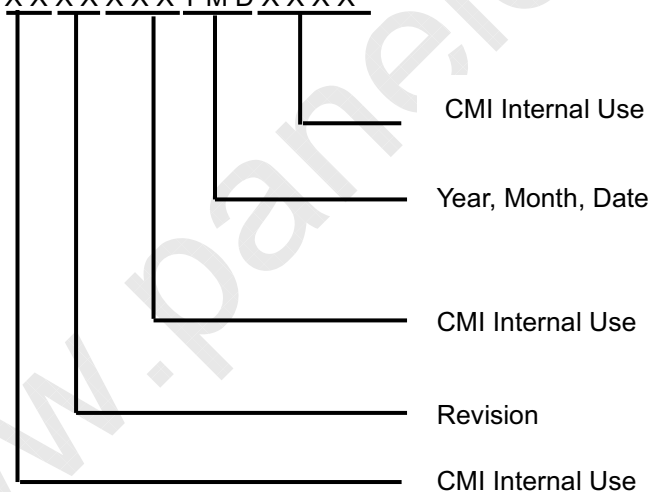
## 9.2 CARTON LABEL

The barcode nameplate is pasted on each box as illustration, and its definitions are as following explanation.

|                                |                                                                                                       |
|--------------------------------|-------------------------------------------------------------------------------------------------------|
| P.O. NO.                       | _____                                                                                                 |
| Parts ID.                      | _____                                                                                                 |
| Model Name                     | V546H1-PS1                                                                                            |
| Carton ID.                     | <br>XXXXXXXXXXXXXXXX |
| Quantities                     | _____                                                                                                 |
| Made In Taiwan (Made In China) |                                                                                                       |

(a) Model Name: V546H1- PS1

(b) Carton ID: X X X X X X Y M D X X X X



Serial ID includes the information as below:

Manufactured Date:

Year: 2010=0, 2011=1,2012=2...etc.

Month: 1~9, A~C, for Jan. ~ Dec.

Day: 1~9, A~Y, for 1st to 31st, exclude I ,O, and U.

Revision Code: Cover all the change

(c) Quantities: 8

## 10. Packaging

### 10.1 PACKING SPECIFICATIONS

- (1) 6 LCD TV Panels / 1 Box
- (2) Box dimensions : 1454 (L) X 994 (W) X 210 (H)
- (3) Weight : approximately 42Kg ( 6 panels per box)

### 10.2 PACKING METHOD

Figures 9-1 and 9-2 are the packing method

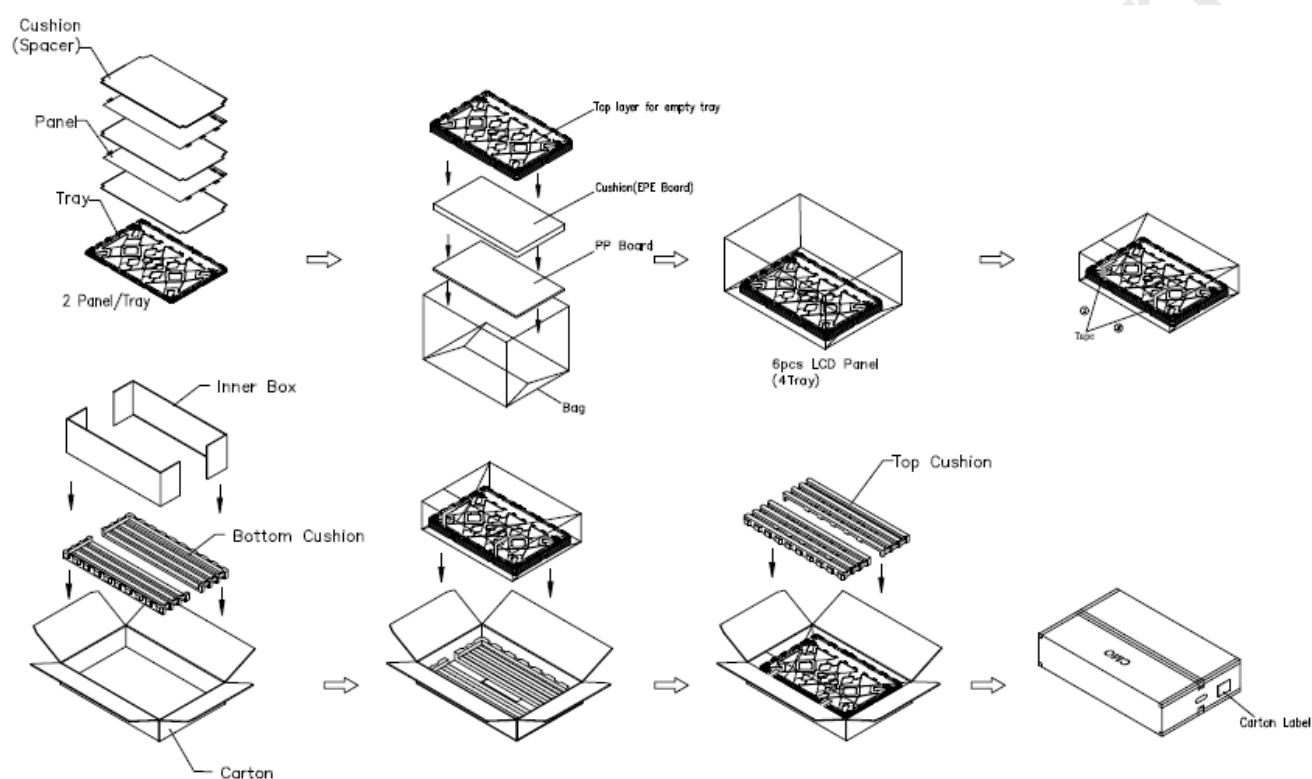
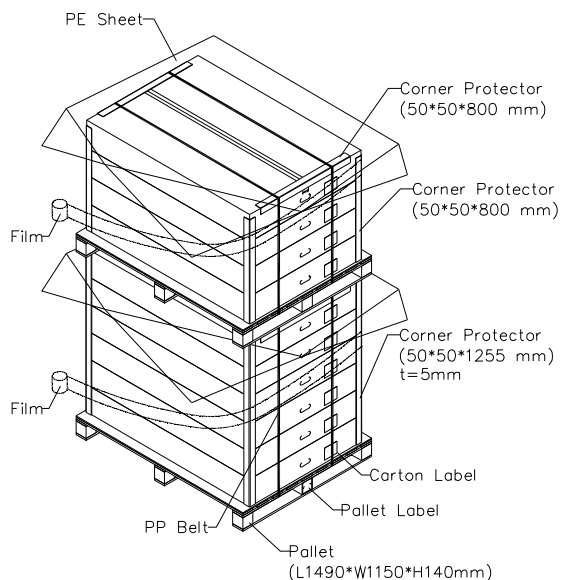


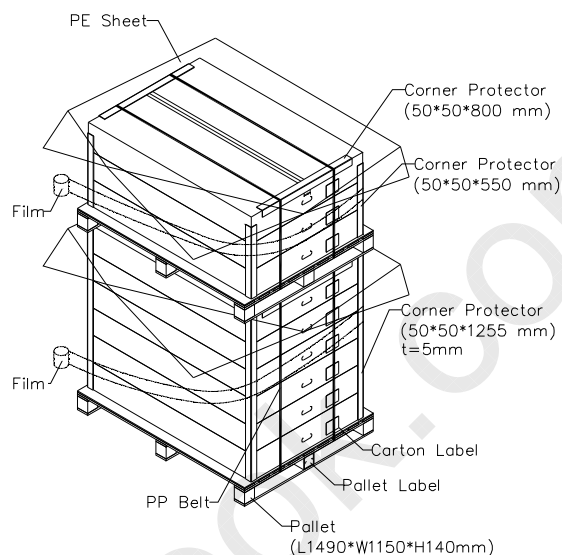
Figure.10-1 packing method



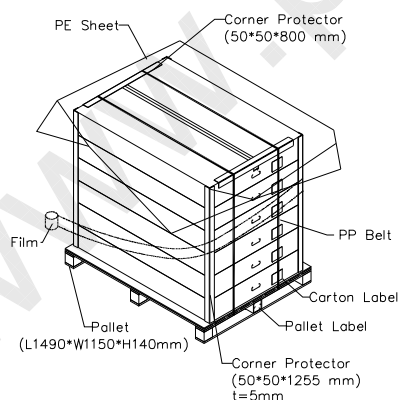
Sea / Land Transportation  
(40ft HQ Container)



Sea / Land Transportation

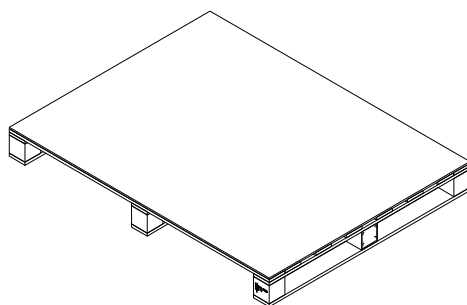


Air Transportation

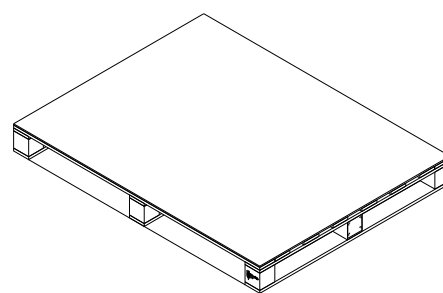




Uses A or the B pallet.



Type A



Type B

Figure. 10-2 Packing method

## 11. MECHANICAL CHARACTERISTIC

